## **RAW SEQUENCE LISTING**

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

| Application Serial Number: | 09/699,/368 |
|----------------------------|-------------|
| Source:                    | 1FW16       |
| Date Processed by STIC:    | 1/26/05     |

## ENTERED



## IFW16

RAW SEQUENCE LISTING DATE: 01/26/2005 PATENT APPLICATION: US/09/699,136B TIME: 16:25:37

Input Set : A:\010025-01 040112 SeqList.txt
Output Set: N:\CRF4\01262005\1699136B.raw

4 <110> APPLICANT: Kosan Biosciences, Inc.

Santi, Daniel

5

```
Peck, Larry
     6
     7
             Dayem, Linda
             Kealey, James
    10 <120> TITLE OF INVENTION: HETEROLOGOUS PRODUCTION OF POLYKETIDES
    13 <130> FILE REFERENCE: 30062-20049.00
    15 <140> CURRENT APPLICATION NUMBER: US 09/699,136B
    16 <141> CURRENT FILING DATE: 2000-10-27
    18 <150> PRIOR APPLICATION NUMBER: US 60/161,414
    19 <151> PRIOR FILING DATE: 1999-10-25
    21 <150> PRIOR APPLICATION NUMBER: US 60/161,703
    22 <151> PRIOR FILING DATE: 1999-10-27
    24 <150> PRIOR APPLICATION NUMBER: US 60/206,082
    25 <151> PRIOR FILING DATE: 2000-05-18
    27 <160> NUMBER OF SEQ ID NOS: 2
    29 <170> SOFTWARE: FastSEQ for Windows Version 4.0
    31 <210> SEQ ID NO: 1
    32 <211> LENGTH: 447
    33 <212> TYPE: DNA
    34 <213> ORGANISM: Artificial Sequence
    36 <220> FEATURE:
    37 <223> OTHER INFORMATION: Isolated and recombinant form of the full
             epimerase gene sequence
 --> 40 <221> NAME/KEY: CDS
    41 <222> LOCATION: (1) ... (444)
W--> 43 <400> 1
    44 atg agt aat gag gat ctt ttc atc tgt atc gat cac gtg gca tat gcg
                                                                               48
    45 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala
    46 1
    48 tgc ccc gac gcc gac gag gct tcc aag tac tac cag gag acc ttc ggc
                                                                               96
    49 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly
                     20
                                         25
    52 tgq cat gag etc cac ege gag gag aac eeg gag eag gga gte gte gag
                                                                              144
    53 Trp His Glu Leu His Arq Glu Glu Asn Pro Glu Gln Gly Val Val Glu
                                                          45
    54
                35
                                     40
    56 atc atg atg gcc ccg gct gcg aag ctg acc gag cac atg acc cag gtt
                                                                              192
    57 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val
                                 55
    60 cag gtc atg gcc ccg ctc aac gac gag tcg acc gtt gcc aag tgg ctt
                                                                              240
    61 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu
                             70
                                                 75
    64 gcc aag cac aat ggt cgc gcc gga ctg cac cac atg gca tgg cgt gtc
                                                                              288
```

RAW SEQUENCE LISTING DATE: 01/26/2005
PATENT APPLICATION: US/09/699,136B TIME: 16:25:37

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Output Set: N:\CRF4\01262005\1699136B.raw

| 65 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val<br>66 85 90 95  |          |
|--|----------|
| 68 gat gac atc gac gcc gtc agc gcc acc ctg cgc gag cgc ggc gtg cag   | 336      |
| 69 Asp Asp Ile Asp Ala Val Ser Ala Thr Leu Arg Glu Arg Gly Val Gln   |          |
| 70 100 105 110   |          |
| 72 ctg ctg tat gac gag ccc aag ctc ggc acc ggc ggc aac cgc atc aac   | 384      |
| 73 Leu Leu Tyr Asp Glu Pro Lys Leu Gly Thr Gly Gly Asn Arg Ile Asn   |          |
| 74 115 120 125   |          |
| 76 ttc atg cat ccc aag tcg ggc aag ggc gtg ctc atc gag ctc acc cag   | 432      |
| 77 Phe Met His Pro Lys Ser Gly Lys Gly Val Leu Ile Glu Leu Thr Gln   |          |
| 78 130 135 140   |          |
| 80 tac ccg aag aac tga   | 447      |
| 81 Tyr Pro Lys Asn   |          |
| 82 145   |          |
| 85 <210> SEQ ID NO: 2  |          |
| 86 <211> LENGTH: 148   |          |
| 87 <212> TYPE: PRT   |          |
| 88 <213> ORGANISM: Artificial Sequence   |          |
| 90 <220> FEATURE: 91 <223> OTHER INFORMATION: Deduced amino acid sequence of the epimera   | ago gono |
| 92 sequence  | ase gene |
| <u>.</u>   |          |
|  |          |
| 94 <400> SEQUENCE: 2 95 Met Ser Asn Glu Asn Leu Phe Ile Cys Ile Asn His Val Ala Tyr Ala  |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala<br>96 1 5 10 15   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala<br>96 1 5 10 15<br>97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala<br>96 1 5 10 15<br>97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly<br>98 20 25 30  |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala<br>96 1 5 10 15<br>97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly<br>98 20 25 30<br>99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu  |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala<br>96 1 5 10 15<br>97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly<br>98 20 25 30<br>99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu<br>100 35 40 45  |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80  |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu  |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80 105 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val 106 85 90 95   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80 105 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val 106 85 90 95 107 Asp Asp Ile Asp Ala Val Ser Ala Thr Leu Arg Glu Arg Gly Val Gln   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80 105 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val 106 85 90 95 107 Asp Asp Ile Asp Ala Val Ser Ala Thr Leu Arg Glu Arg Gly Val Gln 108 100 105 110   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80 105 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val 106 85 90 95 107 Asp Asp Ile Asp Ala Val Ser Ala Thr Leu Arg Glu Arg Gly Val Gln 108 100 105 Leu Gly Thr Gly Gly Asn Arg Ile Asn   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80 105 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val 106 85 90 95 107 Asp Asp Ile Asp Ala Val Ser Ala Thr Leu Arg Glu Arg Gly Val Gln 108 100 105 Leu Leu Tyr Asp Glu Pro Lys Leu Gly Thr Gly Gly Asn Arg Ile Asn 110 115 120 125   |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80 105 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val 106 85 90 95 107 Asp Asp Ile Asp Ala Val Ser Ala Thr Leu Arg Glu Arg Gly Val Gln 108 100 105 110 109 Leu Leu Tyr Asp Glu Pro Lys Leu Gly Thr Gly Gly Asn Arg Ile Asn 110 115 120 125 111 Phe Met His Pro Lys Ser Gly Lys Gly Val Leu Ile Glu Leu Thr Gln                 |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80 105 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val 106 85 90 95 107 Asp Asp Ile Asp Ala Val Ser Ala Thr Leu Arg Glu Arg Gly Val Gln 108 100 105 110 109 Leu Leu Tyr Asp Glu Pro Lys Leu Gly Thr Gly Gly Asn Arg Ile Asn 110 115 120 125 111 Phe Met His Pro Lys Ser Gly Lys Gly Val Leu Ile Glu Leu Thr Gln 112 130 135 140 |          |
| 95 Met Ser Asn Glu Asp Leu Phe Ile Cys Ile Asp His Val Ala Tyr Ala 96 1 5 10 15 97 Cys Pro Asp Ala Asp Glu Ala Ser Lys Tyr Tyr Gln Glu Thr Phe Gly 98 20 25 30 99 Trp His Glu Leu His Arg Glu Glu Asn Pro Glu Gln Gly Val Val Glu 100 35 40 45 101 Ile Met Met Ala Pro Ala Ala Lys Leu Thr Glu His Met Thr Gln Val 102 50 55 60 103 Gln Val Met Ala Pro Leu Asn Asp Glu Ser Thr Val Ala Lys Trp Leu 104 65 70 75 80 105 Ala Lys His Asn Gly Arg Ala Gly Leu His His Met Ala Trp Arg Val 106 85 90 95 107 Asp Asp Ile Asp Ala Val Ser Ala Thr Leu Arg Glu Arg Gly Val Gln 108 100 105 110 109 Leu Leu Tyr Asp Glu Pro Lys Leu Gly Thr Gly Gly Asn Arg Ile Asn 110 115 120 125 111 Phe Met His Pro Lys Ser Gly Lys Gly Val Leu Ile Glu Leu Thr Gln                 |          |

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/699,136B TIM

DATE: 01/26/2005 TIME: 16:25:38

Input Set : A:\010025-01 040112 SeqList.txt
Output Set: N:\CRF4\01262005\1699136B.raw

L:40 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order! L:43 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:1